



Bertiera rugosa (Rubiaceae), a New Species from Ecuador

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ABSTRACT. *Bertiera rugosa* is described and illustrated. It is known only from a single locality at ca. 2000 m altitude in southern Ecuador. It is distinguished by its conspicuously rugose leaves, short stipule sheaths, and pyramidal inflorescences. An updated key to Ecuadorian *Bertiera* is given.

Key words: *Bertiera*, Ecuador, Ixoroideae, Neotropics, Rubiaceae.

Andersson and Ståhl (1999) recognized four species of *Bertiera* in Ecuador, none of which is known to occur above 1000 m altitude. Recent fieldwork in the Podocarpus National Park of southern Ecuador revealed a fifth species in an area of montane forest at 2000 m altitude. This new species is formally described below. Its most conspicuous feature is its firm-textured, distinctly rugose leaves, which make it different from all other Ecuadorian species.

Bertiera rugosa L. Andersson & C. Persson, sp. nov. TYPE: Ecuador. Zamora-Chinchipec: Podocarpus National Park, road Loja–Zamora, ca. km 15, Quebrada de San Francisco, on trail from visitors hut past Quebrada del Diablo, 03°59'S, 79°08'W, ca. 2000 m, 22 Mar. 2000, C. Persson 496 (holotype, QCNE; isotypes, GB, LOJA, MO, S). Figure 1.

Differt a speciebus omnibus neotropicis *Bertierrae* foliis manifeste rugosis.

Shrub, ca. 1 m tall. Young branches rather densely pubescent from coarse, obliquely upward-directed hairs to ca. 1 mm long, hairs long-persistent. Stipules 0.7–1.1 cm long with sheath 0.2–0.5 cm and lobe 0.5–0.8 cm, rather densely and coarsely pubescent medially, glabrous or subgla-

brous marginally. Leaf blades ovate, 6.2–9.9 × 1.7–3.7 cm, length/width ratio 2.4–3.6, drying ± greenish, chartaceous when dry, the base rounded, the apex acute to vaguely acuminate, secondary veins 7 to 10 pairs, midrib and secondary and tertiary veins deeply impressed above, strongly prominent beneath (and leaf surface hence distinctly rugose), the adaxial surface ± nitid, the midrib rather densely hirsute, but surface otherwise glabrous, the abaxial surface pubescent on midrib, veins, and veinlets, glabrous in between, domatia absent; petioles 0.1–0.3 cm, rather densely pubescent both ab- and adaxially. Inflorescence pyramidal, 2.5–5.5 × 3.5–5 cm, the first 1–3 ramifications dichasial, subsequent ones monochasial, monochasia with 2 to 5 flowers, axes rather densely and coarsely pubescent, bracts of monochasia 1.7–2.9 mm, pedicels obsolete, interfloral axis segments 2.7–3.3 mm, branches not proliferating. Calyx ca. 2 mm long, glabrous both outside and within, without colleters or with few and small ones, the tube ca. 0.5–0.6 mm long, the lobes narrowly triangular to ± lingular, 1.5–1.7 mm long, the sinuses wide and U-shaped; corolla yellowish white, the tube ca. 2.7 mm long, glabrous outside, densely villous inside in upper half, the lobes ca. 2.7 mm long, glabrous abaxially, ± villous adaxially in lower quarter; anthers ca. 1.8 mm long, including a distinct, subulate connective process ca. 0.5 mm; ovary glabrous or very sparsely and irregularly puberulous at base, obconical, ca. 1.5 × 1.7 mm, bilocular with 8 to 12 ovules per locule; style ca. 1.1 mm long, glabrous, stigmatic lobes ca. 2.2 mm long, each with 4 longitudinal ridges on abaxial side. Fruits globose, 5–6 mm diam., pericarp without fiber bundles (and thus not ridged when dry), each locule with

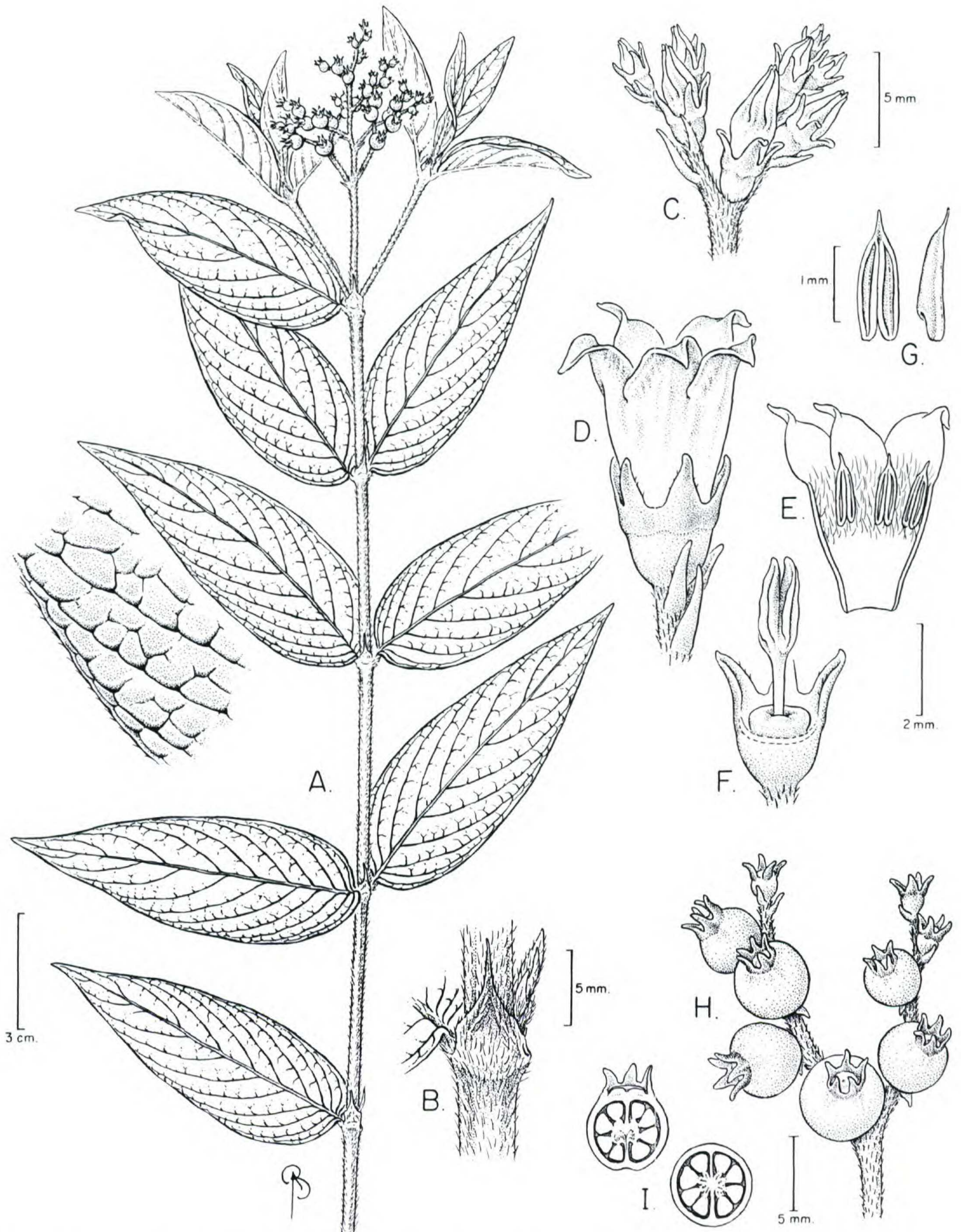


Figure 1. *Bertiera rugosa*.—A. Habit of fruiting branch; detail of leaf surface shown at left. —B. Vegetative node showing stipules. —C. Inflorescence branch with flower buds. —D. Open flower. —E. Corolla cut open, longitudinal view. —F. Ovary with calyx, disk, style, and stigma. —G. Anthers in adaxial and side views. —H. Infructescence branch. —I. Fruit cut longitudinally (left) and transversally. (All drawn from the type collection.)

ca. 8 well developed (and often 1 or 2 aborting) seeds. Seeds polyhedral, ca. 1.7 mm along longest axis.

The type specimens were collected in an area where the vegetation was sparse due to a relatively recent landslide. The type locality is remarkable for its high altitude; no other Ecuadorian collection of *Bertiera* exists from above 1000 m. It also seems odd that no other collection of this species was seen among the material studied during the preparation of the treatment for the *Flora of Ecuador* (Andersson & Ståhl, 1999). The Podocarpus National Park has been intensively inventoried in recent years. It may be that collections of this species are hiding among the many collections of Rubiaceae that have not been identified to genus; the genus *Bertiera* is rather undistinguished to the untrained eye.

Bertiera rugosa is conspicuous because of its distinctly rugose leaf blades, which have even the tertiary venation deeply immersed on the adaxial side. Although there is no published description of a neotropical *Bertiera* with rugose leaves, *B. viburnoides* (Standley) J. H. Kirkbride may often have this characteristic (C. M. Taylor, pers. comm.). *Bertiera viburnoides* is also a species of high altitudes, known from the Cordillera Occidental of northwestern Colombia. It seems to be a larger plant and differs further from *B. rugosa* in having distinctly acuminate leaf blades with fewer (5–6 pairs) lateral veins and a densely corymbose inflorescence.

Among Ecuadorian species, the closest match of *B. rugosa* is *B. pubiflora* (Steyermark) L. Andersson & B. Ståhl. *Bertiera pubiflora* shares with *B. rugosa* the feature of having markedly ovate leaf blades, which dry greenish (rather than blackish), and also have a more marked venation than *B. guianensis* Aublet and *B. procumbens* K. Schumann & K. Krause. However, no specimen of *B. pubiflora* approaches *B. rugosa* even remotely in leaf sculpture. Furthermore, *B. pubiflora* is consistently distinguishable by its long inflorescence bracts.

The five species of *Bertiera* now known to occur in Ecuador may be distinguished using the follow-

ing key, which is adapted from Andersson and Ståhl (1999).

- 1a. Lateral branches of inflorescence lax with a distance between flowers of 2–9 mm; connective process 0.3–0.8 mm long, forming 1/4–1/2 of total anther length; ovules (2)4 to 20 per locule.
 - 2a. Leaf blades rugose, with secondary and tertiary veins deeply immersed above and strongly prominent beneath; stipule sheath 2–5 mm long *B. rugosa*
 - 2b. Leaf blades not rugose, secondary veins level or slightly immersed above, prominulous beneath, tertiary veins \pm level on both sides and often hardly visible; stipule sheath 4–13 mm long.
 - 3a. Pedicels short but distinct (0.1–0.5 mm); ovules (2)4 per locule; fruits \pm smooth *B. procumbens*
 - 3b. Pedicels obsolete; ovules 5 to 19 per locule; fruits (at least when dry) with ca. $10 \pm$ strongly raised longitudinal ribs radiating from calyx.
 - 4a. Leaf blades drying blackish; bracts of inflorescence branches 1–4 mm long; calyx lobes 0.4–0.5 mm long *B. guianensis*
 - 4b. Leaf blades drying grayish to greenish; bracts of inflorescence branches 5–16 mm long; calyx lobes 0.7–1.5 mm long *B. pubiflora*
- 1b. Lateral branches of inflorescence strongly condensed with axes between flowers hardly perceptible; connective process ca. 0.2 mm long, forming ca. 1/10 of total anther length; ovules 2 per locule *B. bracteosa* (J. Donnell Smith) B. Ståhl & L. Andersson

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Literature Cited

Andersson, L. & B. Ståhl. 1999. *Bertiera* Aubl. Pp. 120–129 in G. Harling & L. Andersson (editors), *Flora of Ecuador* 62. Nordic Council for Publications in Botany, Copenhagen.